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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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In re patent application of

Frederick J. Damerau and David E. Johnson

Serial No. 09/605,709

Group Art Unit 2654

Filed June 27, 2000

Examiner Abul K. Azad

For AUTOMATED SET UP OF WEB-BASED
NATURAL LANGUAGE INTERFACE
(As Amended)

Confirmation No. 3738

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

APPELLANT'S BRIEF UNDER 37 C.F.R. §1.192

This brief, which is filed herewith in triplicate, is in furtherance of the Notice of Appeal, filed in this case on October 30, 2003.

This brief contains these items under the following headings, and in the order set forth below (37 C.F.R. §1.192(c)):

- I. REAL PARTY IN INTEREST
- II. RELATED APPEALS AND INTERFERENCES
- III. STATUS OF CLAIMS
- IV. STATUS OF AMENDMENTS
- V. SUMMARY OF INVENTION
- VI. ISSUES
- VII. GROUPING OF CLAIMS
- VIII. ARGUMENTS

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☐ ARGUMENT VIIIA. REJECTIONS UNDER 35 U.S.C. §112, FIRST
PARAGRAPH

☐ ARGUMENT VIIB. REJECTIONS UNDER 35 U.S.C. §112, SECOND
PARAGRAPH

☐ ARGUMENT VIIC. REJECTIONS UNDER 35 U.S.C. §102

☒ ARGUMENT VIID. REJECTIONS UNDER 35 U.S.C. §103

☐ ARGUMENT VIIE. REJECTION OTHER THAN 35 U.S.C. §§102, 103
AND 112

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

X. OTHER MATERIALS THAT APPELLANT CONSIDERS NECESSARY OR
DESIRABLE

I. REAL PARTY IN INTEREST

The real party in interest in the appeal is:

- ☐ the party named in the caption of this brief.
- ☒ the following party: International Business Machines Corp. of
Armonk, New York

II. RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in this appeal:

☒ there are no such appeals or interferences.

☐ these are as follows:

III. STATUS OF CLAIMS

The status of the claims in this application are:

A. Total number of claims in Application

Claims in the application are: Claims 1 to 6

B. Status of all the claims:

1. Claims cancelled: No claims have been cancelled.
2. Claims withdrawn from consideration but not cancelled: No claims have been withdrawn from consideration but not cancelled.
3. Claims pending: Claims 1 to 6 are pending.
4. Claims allowed: No claims are allowed.
5. Claims rejected: Claims 1 to 6 are rejected.

B. Claims on Appeal.

The claims on appeal are: Claims 1 to 6 are on appeal.

IV. STATUS OF AMENDMENTS

The status of amendments filed subsequent to the final rejection are as follows:

A proposed amendment under 37 C.F.R. §1.116 was filed on September 22, 2003. That amendment made an amendment to page 3 of the specification. The amendment to page 3 was in response to the Examiner's objection to the specification as containing embedded and/or other form of browser-executable code. While the Examiner is technically correct that the specification contains what appears to be embedded and/or other form of browser-executable code, what is in fact described are hypothetical uniform resource locators (URLs) for the purpose of illustrating by example the hierarchical structure of Web pages. To avoid confusion with real URLs, the URLs "www.bank.com/loans", "www.bank.com/loans/auto" and "www.bank.com/loans/homemortgage" were enclosed in quotes and a parenthetical explanation has been added that these are hypothetical, as opposed to real, URLs for the sake of the example being described. No amendments were made to the claims. The Advisory Action mailed October 22, 2003, indicated that, for purposes of appeal, the proposed amendment would be entered, and it is understood that in so indicating, the Examiner has withdrawn his objection to the specification.

V. SUMMARY OF INVENTION

The invention as defined in the claims on appeal is directed to a procedure that automates the process of setting up an instance of a conversational natural language interface for a Web site. By automating the process of setting up a new Web site, anyone can create a new interface. Subsequent manual tuning of the interface is possible and much easier to do than creating an interface from scratch. The invention solves the problem by bringing together a number of ideas and techniques, some of which have been used in natural language processing for other purposes. In order to set up an instance of a natural language conversational interface (NLCI), it is necessary to

- 1) define a hierarchy of topics into which individual documents or Web pages can be classified,
- 2) provide a keyword index for those documents for an associated search engine, and
- 3) for each node in the hierarchy, specify a mechanism for associating an input natural language (NL) query to the node. (In the preferred embodiment, this mechanism is a rule set and associated rule applier.)

To solve step (1), Applicants noted that the uniform resource locators (URLs) of the Web pages associated with a single site are often organized into a coherent hierarchy of topics. On reflection, this was not surprising, since good Web design encourages logical movement from page to page. Thus, a bank might have a Web page with the URL "www.bank.com/loans". It will have links to pages with URLs "www.bank.com/loans/auto" and "www.bank.com/loans/homemortgage", and so forth. (The URLs "www.bank.com/loans", "www.bank.com/loans/auto" and "www.bank.com/loans/homemortgage" are hypothetical for this example.) This is clearly a topic hierarchy of exactly the kind necessary for establishing the NLCI, in

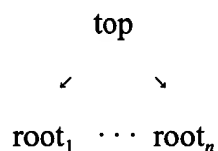
which "loans" is a high level node and "auto" and "homemortgage" are nodes subordinate to it. If these are the lowest level in the hierarchy, the Web pages they point to are leaves.

To solve step (2), Applicants use methods from statistical natural language processing. From each document, Applicants generate a set of single words, bi-grams, etc., up to n -grams for some number n . However, these are not necessarily sequential n -grams. Applicants allow gaps between the words making up the n -gram. The term "sparse n -gram" is used at places in the patent application to emphasize the possibility that there might be gaps between the words in the n -gram. The concept of "sparse n -grams" as introduced by Applicants is unique to this patent application. The gaps between words are limited by establishing a distance d which is the maximum separation between the first and last words of the n -gram. This tactic is partial compensation for the variability allowed by natural language in expressing phrases. For example, one can say "input documents", or one might say "input text documents". The method described would generate an n -gram "input documents" from both of these. (In the preferred embodiment, words are reduced to stems, so the actual n -gram generated would be "input document".) The most frequent n -grams occurring in a document, up to some number m , are used as the keyword index for the document.

Figure 1 is a flow diagram of the automated set up procedure according to the invention. A program implementing a Web crawler is invoked in function block 11, beginning at the home page of the site for which a natural language interface is to be generated. The output of this module is a file of Web pages in HyperText Markup Language (HTML). In function block 12, the Uniform Resource Locators (URLs) of the Web pages are processed to induce a hierarchy of topics for the site and the HTML formatted pages are converted to the appropriate standard format. In a preferred implementation of the invention, the standard format is eXtensible Markup

Language (XML). In function block 13, sparse n-grams are extracted from each page to serve as index terms for the page. The index terms are used to set up an answer generator (search engine) for the page in function block 14. In function block 15, a set of sparse n-grams is generated for each of the topics found in function block 12 by grouping together all the documents having that topic. Those n-grams satisfying some criterion for significant association with the topic are saved. In a preferred implementation of the invention, the criterion used is the chi-square measure. The sparse n-grams are converted to rules in which each term of the n-gram is a term in the rule, and the topic is the rule consequent, in function block 16. Optionally, another statistical test can be made to associate a confidence measure with each rule. In the preferred implementation of the invention, the confidence measure is the percentage of time the underlying n-gram occurs in the topic. Once the preceding steps have been accomplished, all the necessary data is at hand to finish setting up the natural language interface in function block 17.

Figure 2 shows the components of the system and their inter-relationships. These include the Web crawler module 21 which begins at some designated home page(s) and systematically finds all the pages reachable from these initial pages, recursively. Using the URLs of these pages, module 22 finds the topic hierarchy of this site. Note that there might be more than one root (i.e., initial home page) resulting in more than one rooted tree (hierarchy). If there is more than one rooted tree, then the final hierarchy is just



with new top node "Top_n". Module 23 uses the extracted pages along with the hierarchy to find key words and sparse phrases which can serve as index terms for the respective pages. Module 24 is an optional module for manual review and change of

the decisions made by the automated system. Module 25 is a rules generating module which generates rules for each of the topics identified by module 22. Module 25 also uses the documents generated by the Web crawler module 21. The rules generated by module 25 may optionally be edited manually, as indicated by the interface between modules 24 and 25. Module 26 is the interface builder system which uses the outputs of modules 23, 25 and, optionally, 24.

VI. ISSUES

The sole issue presented on appeal is whether claims 1 to 6 are unpatentable over U.S. Patent No. 6,311,182 to Colbath et al. in view of U.S. Patent No. 5,819,220 to Sarukkai et al. under the objective standards of 35 U.S.C. §103(a).

VII. GROUPING OF CLAIMS

Group 1 includes claims 1 to 3 and 6. Group 2 includes claims 4 and 5. The claims in the two groups are distinct in that the claims of Group 1 include the step of defining a hierarchy of topics whereas the claims of Group 2 include the step of automatically inducing a topic hierarchy.

The claims do not stand or fall together. Reasons as to why the grouped claims are separately patentable are included in the arguments.

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ARGUMENT VIII.A. REJECTIONS UNDER 35 U.S.C. §112, FIRST PARAGRAPH

There are no rejections under 35 U.S.C. §112, first paragraph.

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ARGUMENT VIIIB. REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

There are no rejections under 35 U.S.C. §112, second paragraph.

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ARGUMENT VIIC. REJECTIONS UNDER 35 U.S.C. §102

There are no rejections under 35 U.S.C. §102.

ARGUMENT VIIID. REJECTIONS UNDER 35 U.S.C. §103

The Examiner alleges that Colbath et al. teach “An automated method for setting up a natural language interface in a Web site”, but as will be demonstrated below, this is not correct. The Examiner further alleges that Colbath et al. teaches the steps of “defining” and “generating” as recited in independent claim 1, but again as will be demonstrated below, this is also not correct. The Examiner states that “Colbath does not explicitly teach, ‘for each topic in the hierarchy, a set of n-grams to a topic in the topic hierarchy which set of n-grams is distinctive to the topic and wherein the n-grams maybe sparse or non-sparse n-grams’ (emphasis added). It is noted here that Colbath et al. neither explicitly nor implicitly teach this feature. The Examiner relies on Sarukkai et al. for a teaching of this feature, citing column 7, line 27, to column 8, line 11, and column 10, lines 16 to 24, of Sarukkai et al. However, Sarukkai et al. neither shows nor suggests this feature. In fact, as noted in the Summary of the Invention, the notion of “sparse n-grams” is unique to the claimed invention and, furthermore, the application of n-grams as described in the subject application is unique to the claimed invention.

Considering first, the patent to Colbath et al., Colbath et al. teach a very different technology from that of the claimed invention; specifically, a voice-activated Web browser. In Colbath et al., voice signals are recognized and converted into words. These words are used to form a search string, and a search is then performed, for example, on the Internet or on a Web site. The search is performed over a preselected collection of areas of interest. Colbath et al. further disclose methods for searching when the search terms do not match with any preselected areas of interest.

Colbath et al. is very different from the claimed invention for several reasons. First, the claimed invention is directed to a method for setting up a Web site query interface, and Colbath et al., by contrast, is directed towards searching based on voice commands. Colbath et al. do not teach setting up a Web query interface, as alleged by

the Examiner. Second, as recognized by the Examiner, Colbath et al. do not teach the step of, for each Web site topic, associating a set of n-grams to the topic, which are distinctive of that topic, as recited in the third step of claim 1. In the preferred embodiment, these sets of n-grams are converted to classification rules, and claim 6, dependent on claim 1, recites this step.

Colbath et al. do not teach or suggest an automatic method for setting up a Web query interface, as alleged by the Examiner. In fact, Colbath et al. is completely lacking any suggestion to set up a query interface. Instead, Colbath et al. teaches only methods for conducting Web searches using voice commands.

By comparison, independent claim 1 and dependent claim 3 are directed to “setting up a natural language interface in a Web site”. Setting up a natural language interface according to the present invention requires that documents on a Web site are classified, and requires that a keyword index is created for documents in the Web site. This allows a person creating the natural language interface to do so efficiently and easily. The natural language interface allows a search engine to find documents on a Web site set up according to the invention. Colbath et al., do not teach how to create or set up a natural language interface, but instead teach how to perform a search using voice commands. Setting up a natural language interface and performing a search are two entirely different and distinct functions. Setting up a natural language interface allows a search program to search a Web site according to a query protocol (possibly specified by the interface), and performing a search finds documents of interest. Hence, the teachings of Colbath et al. are not really applicable to the claimed invention.

Specifically, because Colbath et al. do not teach setting up a natural language interface, and instead teach performing a search, they necessarily lack, contrary to the Examiner’s allegation, the essential step of “generating a keyword index for those documents”, as recited in claim 1. The Examiner argues that Colbath et al. teach this

limitation in col. 3, lines 1–12. However, in this passage, Colbath et al. explain something quite different; specifically, that it is the “most probable word strings” of the *input speech* that are searched for. By comparison, in the claimed invention, the above-referenced limitation requires that a keyword index is *created for a collection of documents* so that the documents can be searched more effectively. The keyword index of the present invention allows a search engine to find documents; *the keyword index is not searched for*, as required by Colbath et al. Instead, the keyword index of the present invention *represents a field searched in*. The Examiner has confused the search terms with the search field in the Colbath et al. reference. Hence, the teachings of Colbath et al. do not include or suggest generating a keyword index as in the present invention.

Also, as noted above, Colbath et al. does not teach a mechanism for associating a rule to a topic, as required by claim 1. The claimed invention, and in particular the third element of claim 1, is not concerned with speech recognition (although it may be compatible with speech recognition). The third element of claim 1 requires that each topic in the topic hierarchy is associated with a set of n-grams which are distinctive of that topic, so that searches can be performed.

Regarding claim 3, the Examiner argues that Colbath et al. teach a keyword index, and that reviewing the keyword index is also taught by Colbath et al. However, Colbath et al. do not teach a keyword index according to the present invention. Col. 2, lines 20–35, of Colbath et al., identified by the Examiner with reference to claim 3, teaches that key words are searched for by providing them to a search engine. Col. 2, lines 20–35, does not teach a keyword index as in the present invention, wherein the keyword index is created from Web pages and is a field searched in. Hence, Colbath et al. do not meet the limitations of claim 3.

Regarding claim 4, Colbath et al. do not teach “creating rules from the sparse n-grams, wherein each topic has associated rules that are used to decide if a new input

document or query references the topic". This is because Colbath et al. do not teach a natural language interface, and Colbath et al. do not teach that topics have associated rules. Colbath et al. teach only a voice activated search or Web browser, as explained above. The above-quoted limitation from claim 4 requires that Web pages or documents be classified into a topic hierarchy so that they may be searched according to the present invention. Colbath et al. do not teach setting up topics or classifying data so that it can be searched, and hence do not meet this limitation of claim 4.

Claims 1 to 3 and 6 of Group 1 include the step of defining a hierarchy of topics, whereas claims 4 and 5 of Group 2 include the step of automatically inducing a topic hierarchy. As described on page 5 of the specification, module 22 finds the topic hierarchy of a site using the URLs of the pages found by the Web crawler module 21.

Sarukkai et al. do teach the use of n-gram language models. However, the teachings of Sarukkai et al. are not applicable to the claimed invention because they are not directed toward the set-up of a natural language interface. Sarukkai et al. instead teach methods for dynamically altering language models according to word sets in the documents searched. In other words, the language model is adjusted in response to documents found in a search. The n-grams used by Sarukkai et al. are used for speech recognition, as known in the art. For example, Sarukkai et al. teach smoothing or re-estimating "n-gram *language model scores...*" (col. 9, lines 20–21, emphasis added), thereby implying that the n-grams are used for speech recognition. N-grams are extremely well known in the art of speech recognition. By comparison, the n-grams employed in the present invention are created from documents to be searched, and the n-grams are stored as an index for searching. Hence, the n-grams in the present invention are used for very different purposes compared to the n-grams of Sarukkai et al. Consequently, the n-grams of Sarukkai et al. cannot reasonably be combined with Colbath et al. to meet the limitations of claims 2 or 4, as the Examiner

argues.

Much of the confusion on the part of the examiner comes from two sources: (1) the failure to distinguish the field of speech/voice recognition and generation/synthesis from text-based natural language processing, e.g, as ubiquitous in search applications and (2) failure to distinguish a method for setting up a system, as in the current invention, from the systems themselves. Beyond that, in the two patents referred to and the other references, there is no mention of automated methods for setting up any system let alone a Web-based natural language interface.

To review the claimed invention, the basic set up is the following:

1. The system implicit in the invention, to which the automated set up methods pertain, requires a taxonomy of topics for a collection of documents, assumed to be associated with URLs, and a set of classification rules for each topic. The classification rules are used to classify user queries into topics as described in the now issued patent No. 6,567,805, cited as patent application Serial No. 09/570,788 in the cross-reference to related applications on page 1 of the specification.
2. The claimed invention specifies how to induce a taxonomy from a set of URLs and their associated documents and then a set of classification rules for the nodes in the taxonomy.
3. The method consists of (i) crawling a particular Web site, producing a set of Web pages (the documents to be associated with a taxonomy); (ii) using the structure of the URLs as the structure of the hierarchy; (iii) extracting from individual documents and from groups of documents, so-called sparse n-grams, each of which is characteristic of a document or group of documents, where each group is associated with a node in the taxonomy; (iv) determining which phrases, whether sparse or not, are characteristic of the document or group of documents by some statistical technique for identifying salient

collocations; and (v) converting the so-called sparse n-grams to classification rules for use in a classifier as described in patent No. 6,567,805 (cross-referenced as application Serial No. 09/570,788).

Note that the term “sparse n-gram” as defined and used in the disclosed and claimed invention, are sequences of tokens or words from the text where the tokens or words may or may not have other words between them. Perhaps the term “sparse n-gram” has confused the Examiner into thinking that the n-grams as used in art of speech/voice recognition is relevant to the claimed invention. However, both the specification as filed and the foregoing explanation have made clear that the claimed invention is using the concept of n-grams in a different way than used in the art of speech/voice recognition. All that is meant is the more generic notion of a set (or sequence) of not necessarily adjacent tokens or words in the text. So for instance, in a document about mortgage loan applications, which has the phrase “mortgage loan application” as distinctive, one would presumably identify the phrase “mortgage loan” or even the noncontiguous phrase “mortgage application” as characteristic of the document. An alternative description would be “sparse phrases”, and if this helps the Examiner to better understand the disclosed and claimed invention, he is invited to substitute that description for the term “sparse n-gram”. Note also that there are two subcases of determining distinctive collocations (sparse phrases, sparse n-grams): those distinctive of a single document and those distinctive of a group of documents. Many methods for doing this are well understood in the art and which is used is not material to the general idea of the disclosed and claimed invention.

While at least one of the cited references mentions crawling the Web as part of a search engine, the use to which the crawling of the Web is put is entirely different. None of the literature or patents cited touch on the items above. Specifically, none of them mention using a taxonomy of topics let alone inducing a taxonomy. As the current invention is not about the specific use of the taxonomy or

classification rules (this is covered in patent No. 6,567,805 cross-referenced as patent application Serial No. 09/570,788) and none of the cited references or patents mention this, it can be seen that they do not say anything relevant about this key part of the invention.

None of the literature or patents cited mention using so-called sparse n-grams in the manner used in the current invention, namely, in conjunction with documents and groups of documents associated with nodes or topics in an (induced) hierarchy to identify collocations or phrases that are characteristic of the associated document or group of documents.

None of the literature or patents cited mention converting sparse n-grams or collocations into classification rules, whose use is described in the context of a classification-based natural language interface for the Web in patent No. 6,567,805 (cross-referenced as application Serial No. 09/570,788).

It follows from this that none of the cited literature or patents deal in any way with the combination of these methods nor is such combination implicit in the cited literature or patents singly or in combination. It certainly cannot be reasonably maintained, when this is understood, that the claimed invention is anticipated or made obvious by the references or combination of references. Nor can it be reasonably maintained that the claimed invention is an obvious extension or alteration of what is taught in the references.

Briefly summarizing, Colbath et al. deals with a speech or voice interface that involves simple key word matching against a database of topics or microdomains and associated predefined keywords or phrases. Colbath et al. does not discuss setting up a taxonomy or hierarchy of topics, let alone one induced from a set of URLs. Nor does Colbath et al. discuss or mention building a set of classification rules from the content associate with a taxonomy or topic hierarchy induced from a set of documents associated with URLs. Colbath et al. does not discuss how one identifies the topics or

micro-domains nor how to establish the predefined phrases. In contrast, the claimed invention deals exclusively with a method for inducing or automatically setting up a taxonomy of topics (Sarukkai et al. are silent on the matter of hierarchically structured taxonomies) and with automatically inducing phrases or sparse n-grams distinctive of documents or groups of document associated with nodes or topics in the automatically induced taxonomy. So, the claimed invention and Colbath et al. treats entirely different topics.

Sarukkai et al. deals with a voice activated browser. In large part, Sarukkai et al. deals with how to overcome problems with speech recognition algorithms when there are words that are "out of vocabulary". Instead of employing a rewriting style grammar, which is non-probabilistic and very rigid, Sarukkai et al. employs n-grams. But n-grams also have the problem that they are statically trained on a given corpora and the Web will always have many words not in the training corpus, which means the speech recognition system. The claimed invention deals with dynamically altering scores of the statistical language model and acoustic model used in speech recognition systems. Sarukkai et al. simply does not deal with any of the topics addressed in the disclosed and claimed invention. The common use of the term n-gram, which at a technical level are quite distinct, as for Sarukkai et al., "n-gram" means a sequence of tokens that are assigned probabilities within the context of a speech recognition system language model, is irrelevant to the claimed invention. Many systems use common technologies, but even here the details of usage are very different. One cannot reasonably maintain that Sarukkai et al. anticipates or teaches any features the claimed invention. Nor can anyone maintain with reason that the combination of Sarukkai et al. and Colbath et al. provides what is claimed as neither one treats any of the key items listed above.

In the passages bridging pages 7 and 8 of the Office Action mailed July 31, 2003, Paper No. 6, the Examiner responds to the Applicants arguments with citations

to *Schering Corp. v. Geneva Pharmaceuticals Inc.*, 64 USPQ2d 1032 (DC NJ 2002), decided August 8, 2002, and to MPEP 2144.01 pertaining to implicit disclosure.

Neither citation is apposite to the case before this Board.

The case of *Schering Corp. v. Geneva Pharmaceuticals Inc.*, 64 USPQ2d 1032 (U.S. District Court District of New Jersey) is an unpublished decision brought on a motion for summary judgment. As such, it is not competent legal precedent. Moreover, the issues considered by the District Court were not issues arising under 35 U.S.C. §103 but, rather, 35 U.S.C. §102. The quotation repeated with emphasis by the Examiner appears at page 1038 of the PQ citation. Even though the *Schering* case is not competent legal precedent, it is instructive to review the case (particularly since the Examiner relies on it) to see what the facts were and the basis for the Court's decision.

In this case, Plaintiff Schering Corporation is a pharmaceutical company and is the sole owner of U.S. Patent No. 4,282,233, which covers a drug known as loratadine. This patent was set to expire on June 19, 2002, but Plaintiff obtained a six-month extension of protection to December 19, 2002. Plaintiff markets its loratadine product under the brand name Claritin. Plaintiff Schering is also the sole owner of the central patent at issue, U.S. Patent No. 4,659,716, which covers "DCL"(DesCarboethoxylLoratadine), one of the metabolites of loratadine. During the course of its preclinical studies on loratadine, Schering identified DCL as an active metabolite of loratadine in experiments with laboratory animals and in clinical studies on humans. The '716 patent will expire in February 2004. It was undisputed that the '233 patent was issued more than one year before Schering filed the first application leading to the '716 patent; therefore, the '233 patent constitutes "prior art" to the '716 patent under 35 U.S.C. 102(b).

Defendants are pharmaceutical companies who seek to manufacture a generic version of Claritin as soon as the '233 patent's protection expires. It is

well-established that use of patented inventions solely to develop a generic drug for purposes of FDA approval does not constitute an infringement of the patent. However, in order for a pharmaceutical company to obtain FDA approval for a drug, the company must review "The Orange Book" which lists FDA-approved drugs and patents related thereto, and then make one of the following four certifications with respect to its Abbreviated New Drug Application ("ANDA"): (1) no patent information regarding the new drug sought to be approved has been filed; (2) such patent has expired; (3) the applicant will use the drug after the date on which such patent will expire; or (4) such patent is invalid or will not be infringed by the manufacture, use or sale of the new drug. If a pharmaceutical company seeking to manufacture a generic drug files an ANDA with a paragraph 4 certification that the patent is "invalid or will not be infringed," the generic company must notify the patent owner of such filing and provide the factual or legal basis for the applicant's assertion that the patent is invalid or will not be infringed. That certification itself gives the owner of the patent a statutory cause of action to sue the generic company for infringement even though the generic company has not actually manufactured, used or sold the patented drug. Once the patent owner is notified, he has 45 days to file suit against the generic company for the infringement. If a suit is not filed within 45 days, the FDA may issue an approval for the generic drug. However, if a suit is filed within the allotted time, the approval may be made effective upon the expiration of a 30-month waiting period or such shorter or longer period as a court may order because either party to the action failed to reasonably cooperate in expediting the action. Once an FDA approval for the generic drug is granted, only monetary remedies are available to the patentee, and no injunctive relief shall issue.

Defendants, when they sought to manufacture the generic version of Claritin upon the expiration of the '233 patent, were made aware of the '716 patent, also listed in The Orange Book. The Orange Book listing of the '716 patent together with the

'233 patent forced Defendants to select one of the above-noted certifications regarding both patents. Because Plaintiff listed the '716 patent under the Claritin ('233) entry, Defendants submitted a paragraph 4 certification.

On the Summary Judgment motion, the Court found that Claims 1 and 3 of the '716 patent were "inherently" anticipated by the '233 patent. In arriving at this decision, the Court accepted the parties' position that claims 1 and 3 of the '716 patent covered DCL in any form — whether metabolized within the human body or synthetically produced in a purified and isolated form. The Court explained what it meant by "inherent" anticipation by citation to 35 U.S.C. §102(b) which states in pertinent part:

"A person shall be entitled to a patent unless— (b) the invention was patented or described in a printed publication in this or a foreign country, ... more than one year prior to the date of the application for patent in the United States ..."

The Court determined that section 102(b), as applied to the undisputed material facts of this case, invalidates Claims 1 and 3 of the '716 patent, since, the subject of the '716 patent (DCL in either pure or metabolic form) was "described in a printed publication" (the '233 patent) "more than one year prior to the date of the application for [the '716] patent." The Court went on to say that to serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. In *re* Oelrich, 666 F.2d 578, 581, 212 U.S.P.Q. 323, 326 (CCPA 1981) (quoting *Hansgird v. Kemmer*, 102 F.2d 212, 214, 40 U.S.P.Q. 665, 667 (CCPA 1939)) provides:

"Inherency, however, may not be established by probabilities or

possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient. [Citations omitted.] If, however, the disclosure is sufficient to show that the natural result flowing from the operation as taught would result in the performance of the questioned function, it seems to be well settled that the disclosure should be regarded as sufficient. *Continental Can Co.*, 948 F.2d at 1268-69.”

The Court stated that to establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency is not necessarily coterminous with the knowledge of those of ordinary skill in the art. Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art. However, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning, does not render the old composition patentably new to the discoverer. Insufficient prior understanding of the inherent properties of a known composition does not defeat a finding of anticipation, citing *Robert Harmon*, Patents and the Federal Circuit §3.2(b), at 88 (2001).

The Court went on to say that the Federal Circuit cases establish that knowledge or appreciation of that which anticipates need not be contemporaneous with the application for or issuance of the patent under scrutiny. As the Federal Circuit stated recently:

“Thus, a prior art reference may anticipate when the claim limitation or limitations not expressly found in that reference are nonetheless inherent in it. See *In re Oelrich*, 666 F.2d at 581; *Verdegaal Bros., Inc. v. Union Oil Co. of Cal.*, 814 F.2d 628, 630, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Under the principles of inherency, if the prior art necessarily functions in accordance with, or includes, the claimed limitations, it anticipates. See *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986). Inherency is not necessarily

coterminous with the knowledge of those of ordinary skill in the art. Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art. See *id.*, 801 F.2d at 1326. *Mehl/Biophile International Corp. v. Milgraum, M.D.S.*, 192 F.3d 1362, 1365 [52 USPQ2d 1303] (Fed. Cir. 1999). As noted from the references in *Mehl*, this is not a new doctrine. See also *Titanium Metals Corp. v. Banner*, 778 F.2d 775 [227 USPQ 773] (Fed. Cir. 1985). More recent and extensive treatments of this significant feature of the doctrine of inherent anticipation are found in *EMI Group North America, Inc. v. Cypress Semiconductor Corp.*, 268 F.3d 1342 [60 USPQ2d 1423] (Fed. Cir. 2001), and *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342 [51 USPQ2d 1943] (Fed. Cir. 1999):

“Inherency is not necessarily coterminous with the knowledge of those of ordinary skill in the art.... Artisans of ordinary skill may not recognize the inherent characteristics or functioning of the prior art.... However, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning does not render the old composition patentably new to the discoverer.”

Applying these principles, the Court determined in the case at bar that the natural, inevitable production of metabolic DCL upon human ingestion of loratadine, although not fully appreciated by persons of ordinary skill in that field until more recently than 1984, demonstrates that this process is an “inherent characteristic or functioning” of the use of loratadine, the subject of the ‘233 patent. Therefore, that patent inherently anticipates Claims 1 and 3 of the ‘716 patent, rendering them invalid.

The Examiner also cites MPEP 2144.01, relating to implicit disclosure, but this citation is also inapposite. The case of *In re Preda*, 401 F.2d 825, 159 USPQ 342 (CCPA 1968), like the *Schering* case considers the question of anticipation under 35 U.S.C. §102, not obviousness under 35 U.S.C. §103, but unlike the *Schering* case, the *Preda* case is competent legal precedent. This appeal was from the decision of the

Patent Office Board of Appeals affirming the rejection of claims 7 and 8 of application serial No. 269,707, filed April 1, 1963, entitled "Process for Catalytically Producing Carbon Disulphide From Sulphur and Gaseous Hydrocarbons." The invention relates to a process for producing carbon disulfide from sulfur vapors and a gaseous hydrocarbon using charcoal as a catalyst. The precise invention before the court is defined by the two claims on appeal:

7. A process for producing carbon disulfide from sulfur vapor and gaseous hydrocarbon which comprises reacting the sulfur vapor and gaseous hydrocarbon in contact with charcoal, as a catalyst, at a temperature of about 750°-830°C. and a space velocity of 120-1400.
8. A process according to claim 7 wherein the hydrocarbon is methane.

The reference relied on was a book, Thacker and Miller, *Industrial and Engineering Chemistry*, Vol. 36, No. 2, February, 1944, pp. 182-184. Thacker disclosed the results of investigations conducted to develop catalysts that bring about high rates of reaction between methane and sulfur vapors (to produce carbon disulfide) at 700°C. and below. One catalyst found to perform satisfactorily at these temperatures was "activated charcoal."

The Board, in affirming the Examiner, stated "[The] temperature limitation, which is the only limitation presenting a possibility of distinction, in our mind, appears to be met in the discussion in the first column of page 182, and Fig. 1 [of Thacker]." The Court, in affirming the Board's decision, noted that one of the relevant portions of column 1 on page 182 of Thacker reads as follows:

"De Simo * * * recently patented a catalytic process for converting methane with sulfur vapors into carbon disulfide at 800° to 1000°C. 1

In this column Thacker also describes the temperatures used in his investigations, i.e., 700°C. and below, as being "much lower than had previously proved feasible * * *." Fig. 1 shows the theoretical conversions, at temperatures of from about 400° to

somewhat above 750°C., for the reaction of hydrogen sulfide with methane and for the six reactions of sulfur with methane that the authors considered the most likely to occur under the conditions of their investigations.

The Court noted that Figure 1 of Thacker, by itself, does not disclose every limitation in the appealed claims. However, in considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom. *In re Shepard*, 50 CCPA 1439, 319 F.2d 194, 138 USPQ 148 (1963). In this regard, the Court noted that the above quoted reference in column 1 to "a catalytic process for converting methane with sulfur vapors into carbon disulfide at 800° to 1000°C.," the statement in column 1 that the temperatures used in Thacker's investigations were "much lower than had previously proved feasible for reactions of methane with sulfur," and the recognition in Table I and Figure 1 that methane and sulfur could be reacted at temperatures above those used by Thacker. This convinced the Court that, although Thacker does not expressly state that carbon disulfide could be produced by reacting methane and sulfur in the presence of activated charcoal as a catalyst at temperatures within the range recited in the appealed claims, there would be a recognition of this fact from a consideration of Thacker by one skilled in the art.

In this column Thacker also describes the temperatures used in his investigations, i.e., 700°C. and below, as being "much lower than had previously proved feasible * * *." Fig. 1 shows the theoretical conversions, at temperatures of from about 400° to somewhat above 750°C., for the reaction of hydrogen sulfide with methane and for the six reactions of sulfur with methane that the authors considered the most likely to occur under the conditions of their investigations.

In other words, reading the reference as a whole, taking into consideration all that it teaches, what is implicitly taught is anticipatory. But it does not follow that what is not taught is implicit. There must be a factual basis for what is said to be

implicit in the reference, as was clearly the case in the facts before the Court in *In re Preda*.

The basic considerations which apply to obviousness rejections are set out in MPEP 2141:

“When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- “(A) The claimed invention must be considered as a whole;
- “(B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- “(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- “(D) Reasonable expectation of success is the standard with which obviousness is determined.”

This is the correct standard. It is an objective standard. It does not support the possibility of using hindsight to reconstruct the combination of references, filling in the blanks with allegations of “inherency” and “implicitness”. The Examiner’s rejection of the claims is in error as a matter of law. To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. The Examiner has not pointed to any such extrinsic evidence. To show that something is implicit, the reference must be a factual basis in the reference to support it. The Examiner has not demonstrated any such factual basis. Rather, the Examiner has engaged in impermissible hindsight, ignoring what is specifically claimed and what the references as a whole teach, by combining the references to Colbath et al. and Sarukkai et al., filling in the blanks with allegations of “inherency” and “implicitness”.

As a matter of law, the Examiner’s rejection should be reversed.

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ARGUMENT VIII. REJECTION OTHER THAN 35 U.S.C. §§102, 103 AND 112

There are no other rejections of the claims.

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL (37 C.F.R. §1.192(C)(9))

The text of the claims involved in the appeal are as follows:

- 1 1. An automated method for setting up a natural language interface in a Web
2 site comprising the steps of:
3 defining a hierarchy of topics into which individual documents or Web
4 pages can be classified;
5 generating a keyword index for those documents; and
6 for each topic in the hierarchy, associating a set of n-grams to a topic
7 in the topic hierarchy, which set of n-grams is distinctive to that topic and
8 wherein the n-grams maybe sparse or non-sparse n-grams.

- 1 2. The automated method for setting up a natural language interface in a Web
2 site recited in claim 1, wherein the step of generating a keyword index
3 comprises the step of extracting sparse n-grams of keywords for each group of
4 pages in the topic hierarchy.

- 1 3. The automated method for setting up a natural language interface in a Web
2 site recited in claim 1, further comprising the step of optionally reviewing and
3 editing the keyword index.

- 1 4. An automated method for setting up a natural language interface in a Web
2 site comprising the steps of:
3 automatically inducing a topic hierarchy by examining a structure of
4 the Web site;
5 creating n-grams from pages in the Web site that are associated with a
6 topic in the topic hierarchy wherein the n-grams may be sparse in-grams or

7 non-sparse n-grams; and
8 creating rules from the n-grams, wherein each topic has associated
9 rules that are used to decide if a new input document or query references the
10 topic.

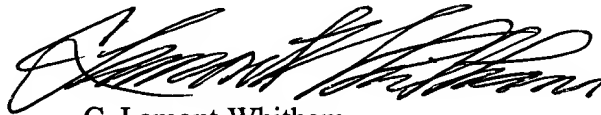
1 5. The automated method for setting up a natural language interface in a Web
2 site recited in claim 4, wherein the step of creating rules is performed
3 automatically and further comprising the optional step of manually editing the
4 rules.

1 6. The automated method for setting up a natural language interface in a Web
2 site recited in claim 1, further comprising the step of converting the set of n-
3 grams to classification rules.

X. OTHER MATERIALS THAT APPELLANT CONSIDERS NECESSARY OR DESIRABLE

There are not other materials necessary or desirable for consideration of this Appeal.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "C. Lamont Whitham", is written over a horizontal line.

C. Lamont Whitham
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